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ORACLE PREMIERE MK IV TURNTABLE & ORACLE SME 345 TONEARM

Manufacturer's Specifications

Turntable

Type: Belt drive.

Speeds: 33⅓ and 45 rpm; electronic speed control with ±5% adjustment.

Permissible Tonearm Lengths: Up to 250 mm (9.84 in.) from pivot to spindle.

Suspension Frequency: Adjustable; typically 3.5 Hz.

Dimensions: 20 in. W × 6½ in. H × 15 in. D (50.8 cm × 16.5 cm × 38.1 cm); control box, 7⅜ in. W × 2¼ in. H × 8 in. D (18.7 cm × 5.7 cm × 20.3 cm).

Weight: 43 lbs. (19.5 kg).

Prices: $3,495 in silver, $4,195 in silver and gold, $4,695 in black and gold; dust cover, $200; additional arm mounting boards, $105 pre-cut, $70 blank.

Tonearm

Pivot-to-Stylus Distance: 232.32 mm (9.15 in.).

Pivot-to-Spindle Distance: 215.35 mm (8.48 in.)

Cartridge Mounting: Detachable headshell; 12.7-mm (0.5-in.) mounting centers.

Offset Angle: 23.204°.

Linear Offset: 91.54 mm (3.6 in.).

Overhang: 16.98 mm (0.669 in.).

Height: 56.4 to 87.9 mm (2.22 to 3.46 in.) above mounting surface.

Permissible Height of Record Surface: 24.4 to 55.9 mm (0.96 to 2.2 in.).

Depth Below Mounting Surface: 56.75 mm (2.23 in.).

Radial Clearance for Balance Weight: 73 mm (2.87 in.).

Clearance Between Record and Dust Cover: 37 mm (1.46 in.) for cartridge height of 17 mm (0.67 in.).

Price: $1,595 in silver, $1,795 in black.

Company Address: 1237 Nielsen Dr., Clarkston, Ga. 30021.

For literature, circle No. 93

My first turntable report, in the March 1982 issue, was on the original Oracle turntable, an exceptional performer. At the time, the idea that sound quality could be affected by any mechanical imperfections of a turntable, aside from wow and flutter or rumble, was controversial, to say the least. I knew that the Oracle would challenge me to devise tests that could be correlated with listener comments, and I remember my trepidation as I began. A decade later, measuring the imperfections of the Oracle Premiere MK IV still presents a considerable challenge.

This latest version of the Oracle is similar in many ways to the original but has some notable improvements. The MK IV is even more beautiful and superbly finished than the original, which was a standout in its day. The MK IV's gold-plated suspension towers and record clamp, the satin-finished aluminum turntable and its platform, the black record mat and platter rim, and the clear acrylic turntable base make a stunning sight. The satin-finished aluminum tonearm, which is made especially for Oracle by SME, looks perfectly at home, mounted on the special SME-type mounting base which extends from the rear of the turntable platform. The Oracle SME 345 is essentially similar to the SME 309 tonearm, which I reported on in the September 1990 issue. When I performed the tap test on the 345's armtube, it sounded more uniform, from a point behind the headshell all the way to a point just forward of the tonearm pillar, than did the SME 309. Perhaps the damping is slightly different in the Oracle 345 version. The tonearm bearings are excellent and have very low friction. When I tried to push, pull, and twist the armtube while holding the tonearm pillar firmly in my other hand, I could discern no play at all, an indication of good design and assembly. The general appearance and fine finish of the Oracle Premiere turntable and 345 tonearm give testimony to the great care in design and manufacture.

The Premiere MK IV turntable's base is made of transparent acrylic, ⅞ inch thick. The suspension towers are about 4½ inches high and 1¾ inches in diameter. The bearing well, tonearm mount, and a bubble level are all mounted to a four-layer skeletal structure of laminated aluminum, like that in the original Oracle. This structure is suspended at three points by spring systems, damped by rubber inserts, in the towers. Threaded rods, extending through the acrylic base to the mounting feet, are used to level the turntable base.

MEASURED DATA

Oracle Premiere MK IV Turntable

PARAMETER	MEASURED	COMMENT
Speed Stability	±0.15%	Excellent
Wow, DIN Unwtd.	0.22%	Very good
Wow, DIN Wtd.	0.13%	Good
Flutter, DIN Unwtd.	0.15%	Good
Flutter, DIN Wtd.	0.03%	Excellent
Wow & Flutter, DIN Unwtd.	0.27%	Very good
Wow & Flutter, DIN Wtd.	0.13%	Good
Long-Term Drift	0.10%	Excellent
Rumble, Unwtd.	67.5 dB	Excellent
Rumble, Wtd.	82.9 dB	Excellent
Suspension Resonance	3.0 Hz	Good

MEASURED DATA

Oracle SME 345 Tonearm

Pivot-to-Stylus Distance: 9.14 in. (232 mm).
Pivot-to-Rear-of-Arm Distance: 2.375 in. (60.3 mm).
Tracking-Force Adjustment: 0 to 2.5 grams.
Tracking-Force Calibration: Calibrated tool supplied.
Cartridge Weight Range: 6 to 17 grams.
Counterweight: 154.2 grams.
Counterweight Mounting: Locked to rear of tonearm after adjustment.
Sidethrust Correction: Knob on extension from arm pillar.
Pivot Damping: None.
Lifting Device: Damped lever near pillar.
Headshell Offset: 23.5°.
Overhang Adjustment: Sliding pillar in base tracks.
Bearing Type: Ball and race, lateral and vertical.
Bearing Alignment: Excellent.
Bearing Friction: Below 40 mg, lateral and vertical.
Lead Torque: Very Low.
Arm Lead Capacitance: 18 pF, each channel.
Arm Lead Resistance: 1.3 ohms, each channel.
External Lead Length: 3.9 ft. (1.2 m).
External Lead Capacitance: 130 pF, each channel.
External Lead Resistance: 0.3 ohm, each channel.
Mounting: SME rack and pinion.

The feet are of aluminum and have elliptical bottoms that give them some of the advantages of point-contact mounting feet without the possibilty of marking or damaging the surface on which the turntable is placed. Where the original Oracle used a rod and adjustable weight to counterbalance the mass of the various tonearms that might be used with it, the Premiere MK IV has a semicircular weight attached to the skeletal structure, directly opposite the tonearm mount, which the company says will effectively counterbalance whatever arm is mounted. The turntable motor is mounted directly to the acrylic base and has a specially shaped pulley on its drive shaft. A belt runs from this pulley to a step on the underside of the platter. The platter, which weighs 6 pounds (including its integral mat), is of sandwich construction, with its black composite inner layer visible as a ⅝-inch black band between the aluminum top and bottom layers. With the arm attached, the turntable requires about 8 inches of vertical clearance.

The switches for a.c. power and speed selection are flush-mounted on the sloping front panel of a separate, brushed-aluminum, electronic control box. On the rear of this box are two DIN sockets plus a control for adjusting both the 33⅓- and 45-rpm speeds together. (Two separate pots, on the bottom of the box, can be set with a screwdriver to adjust each speed separately.) The four-pin DIN socket accepts the power cable from the motor, and the five-pin DIN socket accepts the cable from the power supply. This power supply is in a separate box that has a heavy-duty "U" frame cover and a mating bottom chassis. The supply can be mounted well away from the turntable because the power cable is 57 inches long.

The Oracle SME 345 tonearm has a detachable headshell and the famous SME rack-and-pinion sliding base for setting the overhang to match different phono cartridges. The Premiere MK IV turntable's round aluminum arm mount has been machined with the special slot that accommodates this base. The 345 is a pivoted tonearm with static balance; the arm is balanced for different cartridge masses by mov-

Oracle has integrated an SME-built tonearm and optimized the combination to produce a decidedly superior product.

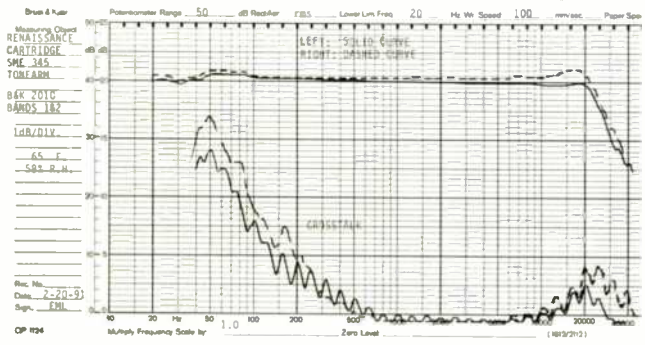

Fig. 1—Frequency response and crosstalk of the Renaissance cartridge in the Oracle SME 345 tonearm. The increase in crosstalk at low frequencies is an artifact of the B & K 2010 test record.

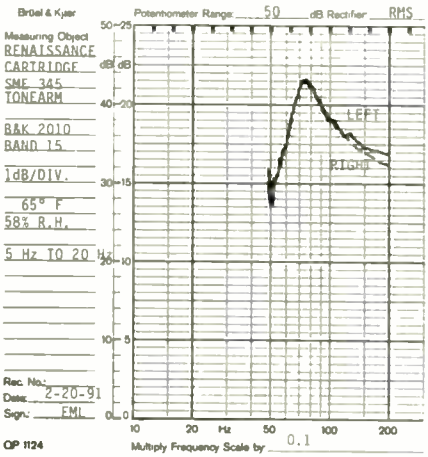

Fig. 2—Low-frequency arm/cartridge resonance is at 8.0 Hz; the Q is 4.7 in the SME tonearm, indicating underdamped response.

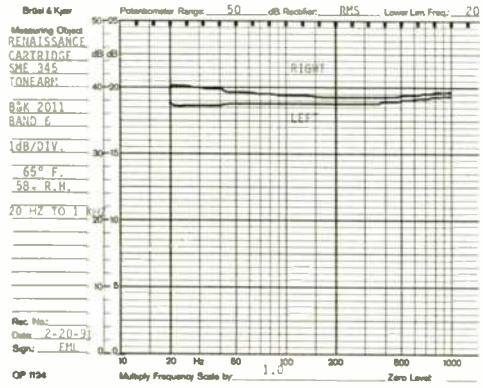

Fig. 3—Slow-sweep check (20 to 1,000 Hz) for tonearm resonances.

ing the counterweight at the rear of the tonearm, after which the tracking force is set by moving another counterweight, closer to the arm pivot. The counterweight is moved by turning a screw with a supplied, calibrated, hex-head adjustment tool; each full turn applies 0.5 gram of tracking force. The 345 includes a damped-lever lifting system with a rubber interface to keep the tonearm from sliding horizontally when it is raised or lowered. It also has a calibrated knob for sidethrust, or anti-skating, correction. A swivelling male DIN plug, mounted at a right angle to the bottom of the tonearm pillar, mates with a female DIN connector on one end of the detachable phono cables and ground lead. The cables have gold-plated phono plugs with coiled-spring strain reliefs; the ground lead has a spade lug that can be connected to the ground on your preamplifier.

Measurements and Listening Tests

After I set up the turntable and tonearm and mounted the cartridge, I made some preliminary measurements that helped me finalize the adjustments; this procedure helps me get optimum performance and also verifies that there are no hidden problems which could invalidate listening or the final measurements. The listening sessions were conducted after the technical measurements were completed, but none of the members of my listening panel ever see the results of these measurements until the listening sessions are finished.

The cartridge I used for my tests was the Renaissance, a low-output moving-coil type that performed well but is being discontinued. I was amazed by its light weight, less than 5 grams.

The frequency response and interchannel crosstalk are shown in Fig. 1. The response is very uniform, without the sag in the middle and upper middle ranges I have seen from some other arm/cartridge combinations. Sometimes this sag can exaggerate the perception of depth in a recording so that it seems to have more front-to-back spaciousness than was actually recorded. The Oracle/Renaissance combination doesn't need this artificial assistance, because comments by members of the listening panel indicate that it excels in presenting a realistic sense of depth. The level of the crosstalk is extremely low, even in the high-frequency range, which may contribute to the uncanny sense of realism. The rise in crosstalk in the low-frequency range is an artifact of the B & K 2010 test record.

Figure 2 shows the low-frequency resonance of the left and right channels at 8.0 Hz from the cartridge compliance and the tonearm's effective mass. The effect on the bass response above 20 Hz is insignificant, and I couldn't correlate it with any comments made by the listening panel. The quality of the sound of double bass and bass drum was very close to that of the reference system, as rated by most panel members, and only one of them commented that the Oracle turntable setup sounded "slightly tighter."

The response of the tonearm and cartridge to a slow sweep from 20 to 1,000 Hz is shown in Fig. 3. There is a slight step, or glitch, at around 40 Hz in each channel as well as glitches at around 400 Hz in the left channel and 500 Hz in the right. The low-frequency glitch may have been caused by the connection between the counterweight and

The Premiere MK IV's rumble is lower than the original Oracle's and is comparable with the best that I have measured.

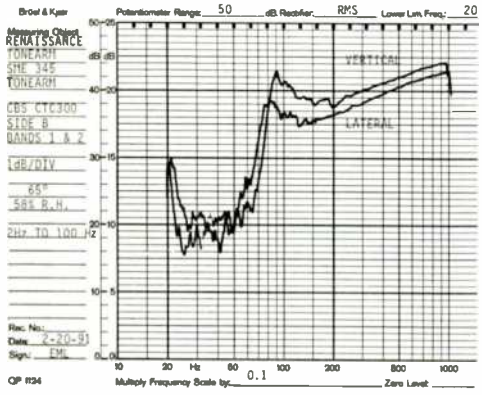

Fig. 4—Response to vertical and lateral modulation from 2 to 100 Hz (slow sweep).

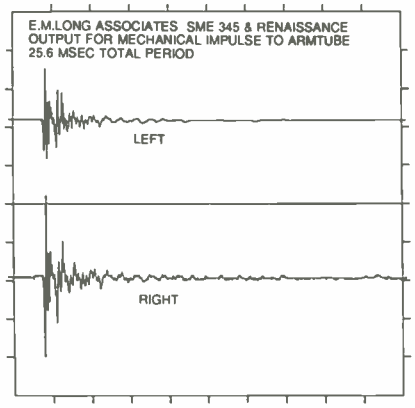

Fig. 5—Output vs. time of tonearm and cartridge when mechanical impulse was applied to armtube, with arm on rest.

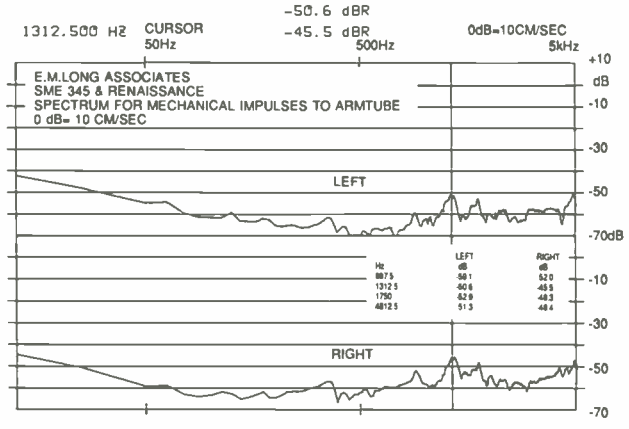

Fig. 6—Spectral output (averaged) of arm/cartridge for series of 16 mechanical impulses applied to armtube.

the rear of the tonearm; the other glitches may have been due to reflection of energy from the vertical and lateral tonearm bearings. There is also a slight possibility that the connection between the headshell and armtube might have been involved, even though it is extremely tight. Sometimes delayed energy reflected back to the stylus can cause coloration in the sound, but nobody on the listening panel made any comments about coloration. Perhaps the superb performance of the Oracle/Renaissance system, which was very close to the reference system in this regard, made it difficult for the listening panel to focus on what slight coloration there may have been.

In Fig. 4, the result of a slow sweep from 2 to 100 Hz for vertical and lateral groove modulation, the response of the 345 tonearm and Renaissance cartridge is greater for vertical modulation. Recordings are usually made with most, if not all, of their low-frequency energy confined to the lateral (mono) groove modulation, for practical reasons having to do with the way records are cut. Therefore, the rise in the vertical output at the low-frequency resonance seen here should not cause any serious ill effects.

The output of the tonearm and cartridge from a mechanical impulse applied to the armtube is shown in Fig. 5. The smaller peaks that follow the initial output are the result of delayed resonances. One might think they would cause audible effects that could diminish the transparency of the perceived sound. This was not the case, however, since comments from the listening panel ("clearer than the reference" and "very transparent sound for full orchestra") indicate that the clarity of the sound was excellent.

The spectrum of the output for a series of 16 mechanical impulses applied to the tonearm and cartridge is shown in Fig. 6. There are some peaks in the midrange, the highest at 1,312.5 Hz, but they are not very severe. These peaks might be correlated with some comments about brightness of the sound of voice and brass, yet when I asked panel members about these written comments later, they said that they considered the sound of the Oracle/Renaissance to be brighter than that of the reference system but that they still considered the sound of the Oracle/Renaissance to be more realistic.

Although the Renaissance cartridge is being discontinued, a few words are merited here on its performance in the Oracle system. This cartridge had a slight interchannel phase difference, only 9.21 mS at 20 kHz, which might just possibly have been perceived as an increase in spaciousness of the presentation. One panel member commented that the orchestra sounded "similar to the concert hall," and the final tally put the MK IV turntable, 345 tonearm, and Renaissance cartridge slightly ahead of the reference system in the rating for spaciousness.

The Renaissance cartridge and 345 tonearm had some difficulty in precisely tracing the 30-cm/S, 10.8-kHz tone on the Shure TTR-103 test record. This is a very severe test, and the combination's performance, if not perfect, was still very good.

Figure 7, the spectrum of the wow and flutter for the Premiere MK IV turntable, is lower than that for the original Oracle turntable but not the lowest I have measured. The contribution of the arm/cartridge resonance can be seen as

The MK IV mat's ability to dissipate energy quickly yields superb transients and excellent detail.

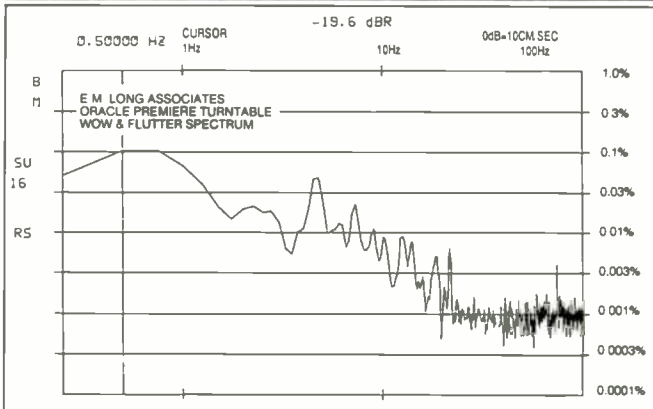

Fig. 7—Wow and flutter spectrum of turntable, from 0 to 100 Hz. The output at about 9.5 Hz is due to the arm/cartridge resonance.

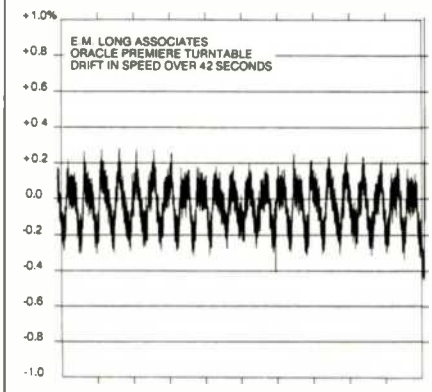

Fig. 8—Speed drift over 42-S period. Cyclic variations at 0.56 Hz are related to the rotational speed of 33⅓ rpm.

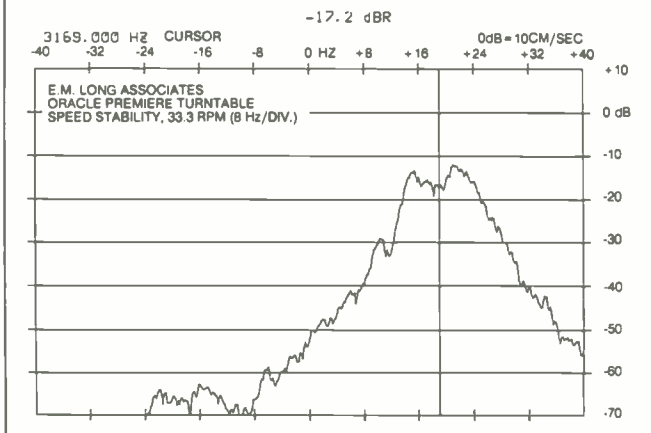

Fig. 9—Speed stability, showing variation from the 3,150-Hz nominal frequency of the test band on the B & K 2010 test record. The center frequency (cursor position) is at 3,169 Hz, 19 Hz above the nominal frequency, which would seem to indicate that the turntable is running 0.6% fast. However, the recorded frequency is probably a bit high.

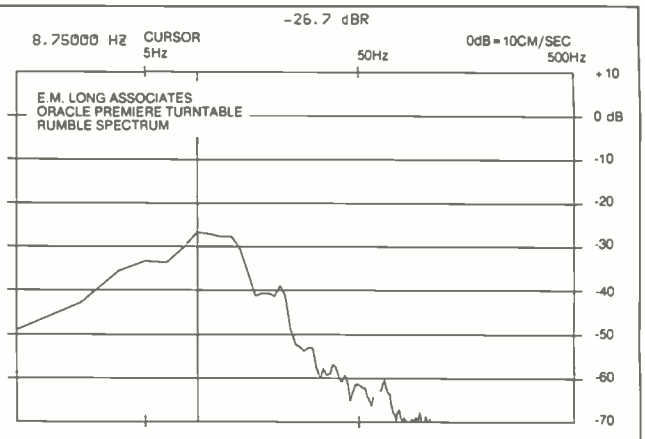

Fig. 10—Rumble spectrum. Most of the output is near the arm/cartridge resonance.

a peak at 9.5 Hz, but it is reasonably low. Figure 8 shows the long-term drift over a 42-S period. You can observe undulations at the rotational frequency of 0.56 Hz, or the 33⅓-rpm speed of the turntable. The curve appears to be more uniform than the orignal Oracle turntable's, probably due to the superior power supply of the newer MK IV. The speed stability is shown in Fig. 9; the result is similar to that of the original Oracle. I have come to the conclusion that the 3,150-Hz tone on the B & K 2010 test record is actually a little higher in frequency when the rotational speed of the record is set exactly at 33⅓ rpm by using a stroboscopic disc. This has been consistently true for most of the turntables that I have tested. In any case, for listeners with perfect pitch, the speed adjustment on the control box should take care of any problems caused by recordings that may have been cut slightly off-speed. The listening panel's comments about the Oracle Premiere when reproducing piano—such as "cleaner," "clearer," and "more realistic" than the reference system—tell me that its wow, flutter, and drift deserve the excellent to good ratings I have given them in the "Measured Data" Table.

The spectrum of the rumble, seen in Fig. 10, is primarily due to the arm/cartridge resonance. The MK IV's rumble is lower than the original turntable's and is comparable with the best that I have measured.

The output of the system due to a mechanical impulse applied to the edge of a stationary record is shown in Fig. 11. The stylus was sitting in a groove on the record, so the output includes the contributions of the cartridge, tonearm, turntable, and record. The spectrum of the output for a series of 16 such mechanical impulses is shown in Fig. 12. This test is meant to determine, among other things, the ability of the turntable platter's mat to remove or damp out the mechanical energy inside a record. Figure 11 shows that the energy is dissipated quickly, while Fig. 12 shows that most of the energy is in the lower frequency range.

Even my earliest stereo LPs sounded so good that I was swept into the scene, and isn't that what great sound reproduction is about?

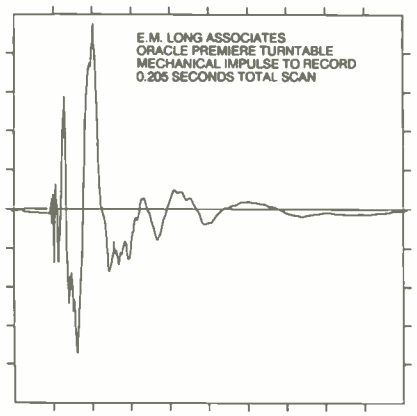

Fig. 11—Output vs. time for mechanical shock applied to the edge of a stationary record.

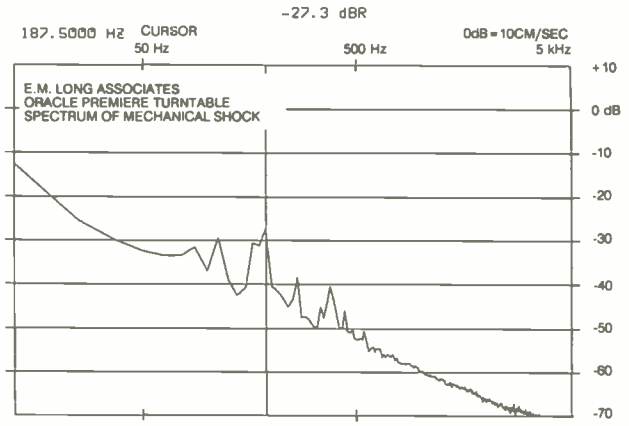

Fig. 14—Spectrum to 5 kHz of the vibrations caused by mechanical shock applied to the platform on which the turntable was resting (16 impulses, averaged).

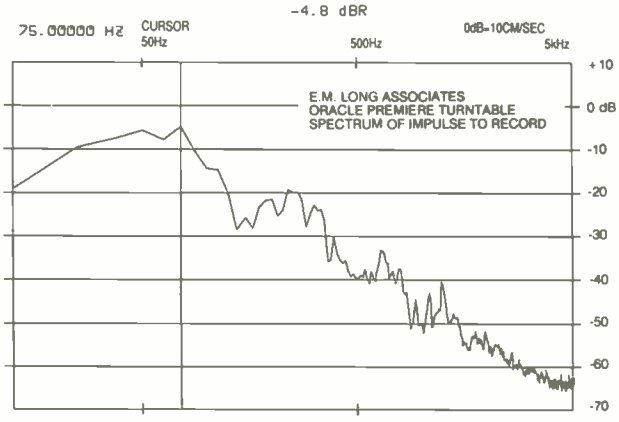

Fig. 12—Spectrum to 5 kHz of vibrations from mechanical impulse applied to edge of a stationary record (16 impulses, averaged).

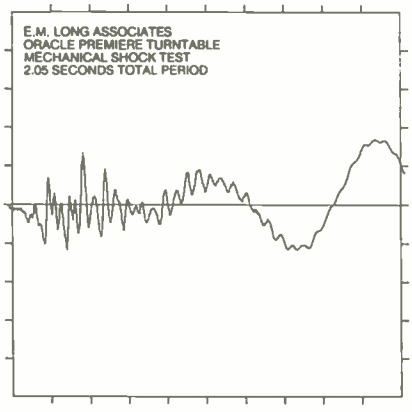

Fig. 13—Output vs. time for mechanical shock applied to the platform on which the turntable was resting.

Piano music with staccato passages and recordings with rapid, high-frequency transients were used to correlate the perceived sound with these measurements. Comments such as "very clear," "superb transients," and "excellent detail" were used to describe the Oracle/Renaissance combination.

A mechanical shock was applied to the platform on which the Premiere MK IV turntable was resting, and the output is shown in Fig. 13. Some energy at frequencies higher than the 3.0-Hz suspension resonance is apparent, and there is a delay before the energy at 3.0 Hz builds up. A series of 16 mechanical shocks, spaced at 3-S intervals, was applied to the platform. The spectrum from these shocks is shown in Fig. 14. There are energy peaks between about 80 and 500 Hz, with the major peak at 187.5 Hz. This energy is at a very low level and should not pose a problem under normal conditions.

Acoustical breakthrough, or feedback, was tested by playing very high-level, low-frequency passages rather than by conducting the usual controlled test. The turntable, tonearm, and cartridge exhibited excellent isolation and freedom from feedback problems.

Conclusions

The Premiere MK IV is an improved and refined version of the Oracle turntable that set new standards in sound quality when it was first introduced in the beginning of the 1980s. By integrating the SME-built 345 tonearm with the MK IV and optimizing the combination, Oracle has produced a definitely superior product. I couldn't resist the urge to play some of the earliest stereo recordings in my collection to hear them again with these components. Even the Cook Laboratories *Fiesta Flamenca* with Carlos Montoya, recorded in about 1951 with two Capps condenser microphones, sounded so good that I was swept into the scene and began clapping along with the performers. That's involvement! But isn't that what great sound reproduction is supposed to be about?

Edward M. Long